
Service Parts Investment Policies and Control

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SERVICE PARTS INVESTMENT POLICIES AND CONTROL

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I INTRODUCTION

- The availability of service parts is a major problem area facing customer service management. Users are adversely affected by a vendor's failure to have parts available because it causes prolonged repair times.
- Service vendors themselves suffer a double penalty.
 - Holding high parts inventory ties up a significant amount of capital-- particularly onerous in periods of high interest rates.
 - Failure to have parts available causes repeat visits to effect a repair, a costly process. This is demonstrated in Exhibit I-1, which shows that labour costs account for 49% of the total cost of the repair. With an average repair cost of \$212, that labour penalty is \$104 per unnecessary visit.
 - Apart from the financial penalty of not having the required parts available, there is also the loss of customer goodwill.
- Exhibit I-2 analyzes the number of complaints about service made by users. Parts availability accounted for some 9% of all complaints.
- The situation varies from country to country, as demonstrated by Exhibit I-3, which shows that French users are suffering most. In the U.K., there has been a significant improvement in performance, with the level of complaints

EXHIBIT 1-1

COST COMPONENT OF A TYPICAL SERVICE CALL

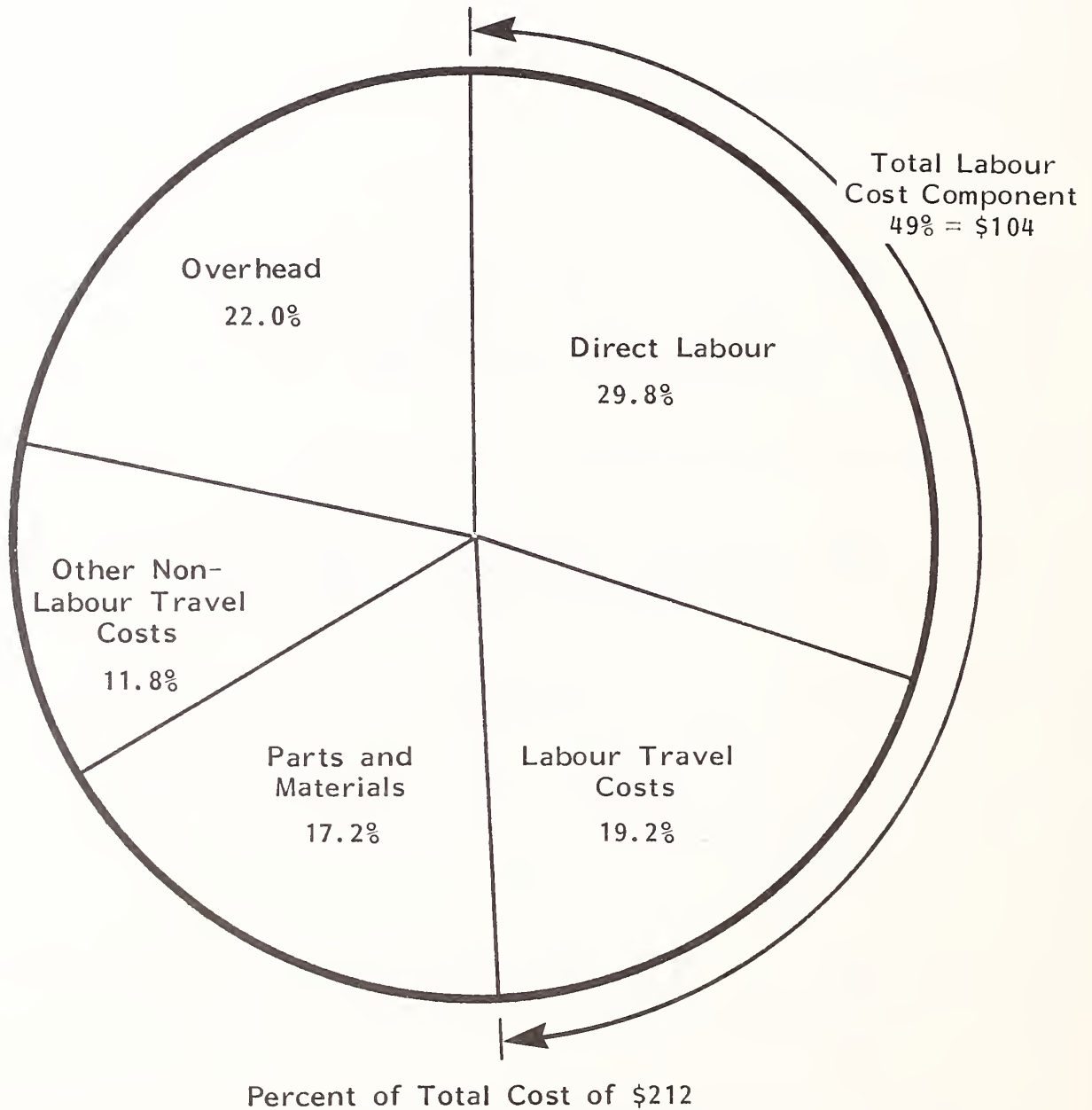


EXHIBIT I-2

USER COMPLAINTS ABOUT SERVICE
(Percent of All Complaints)

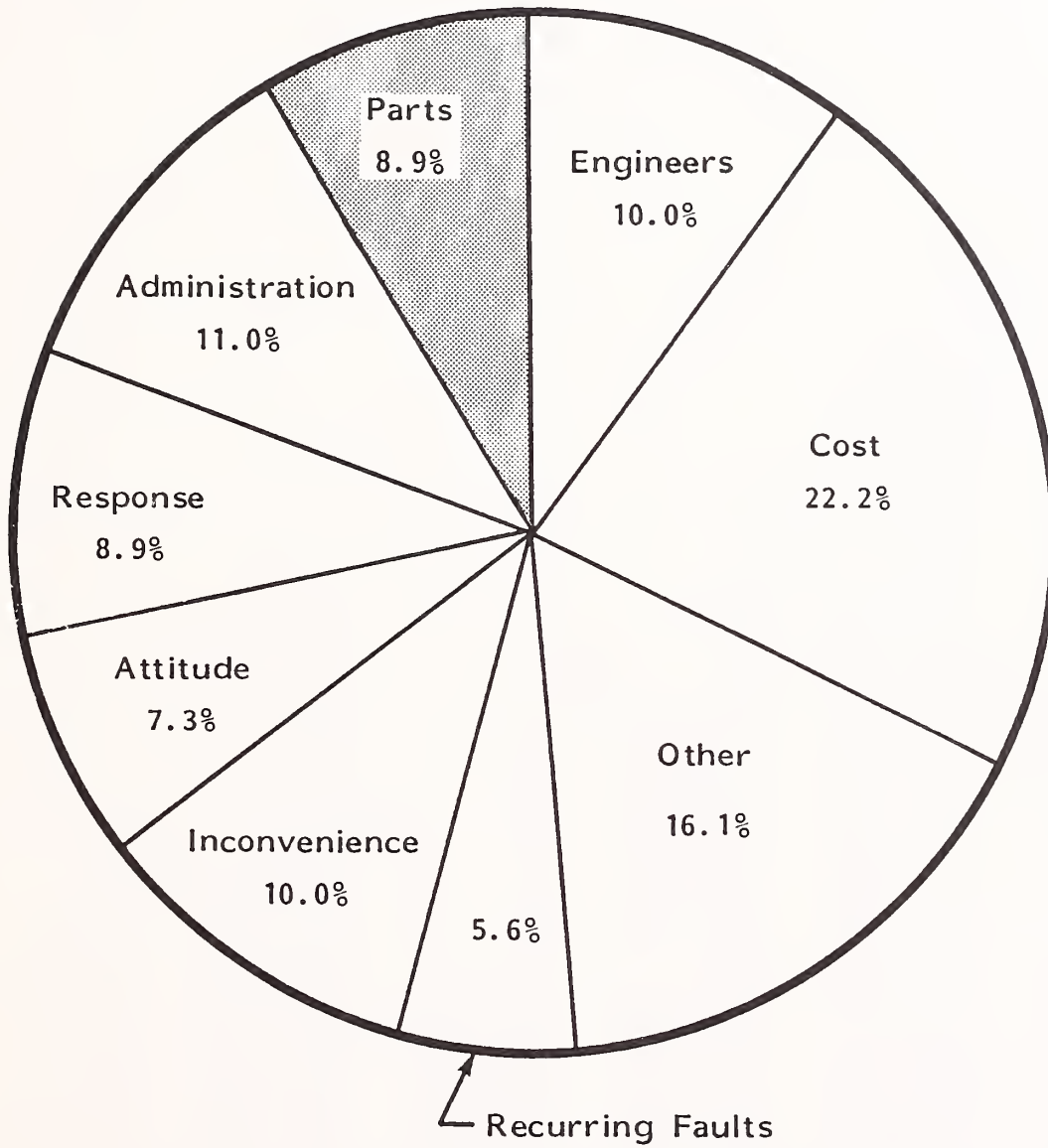
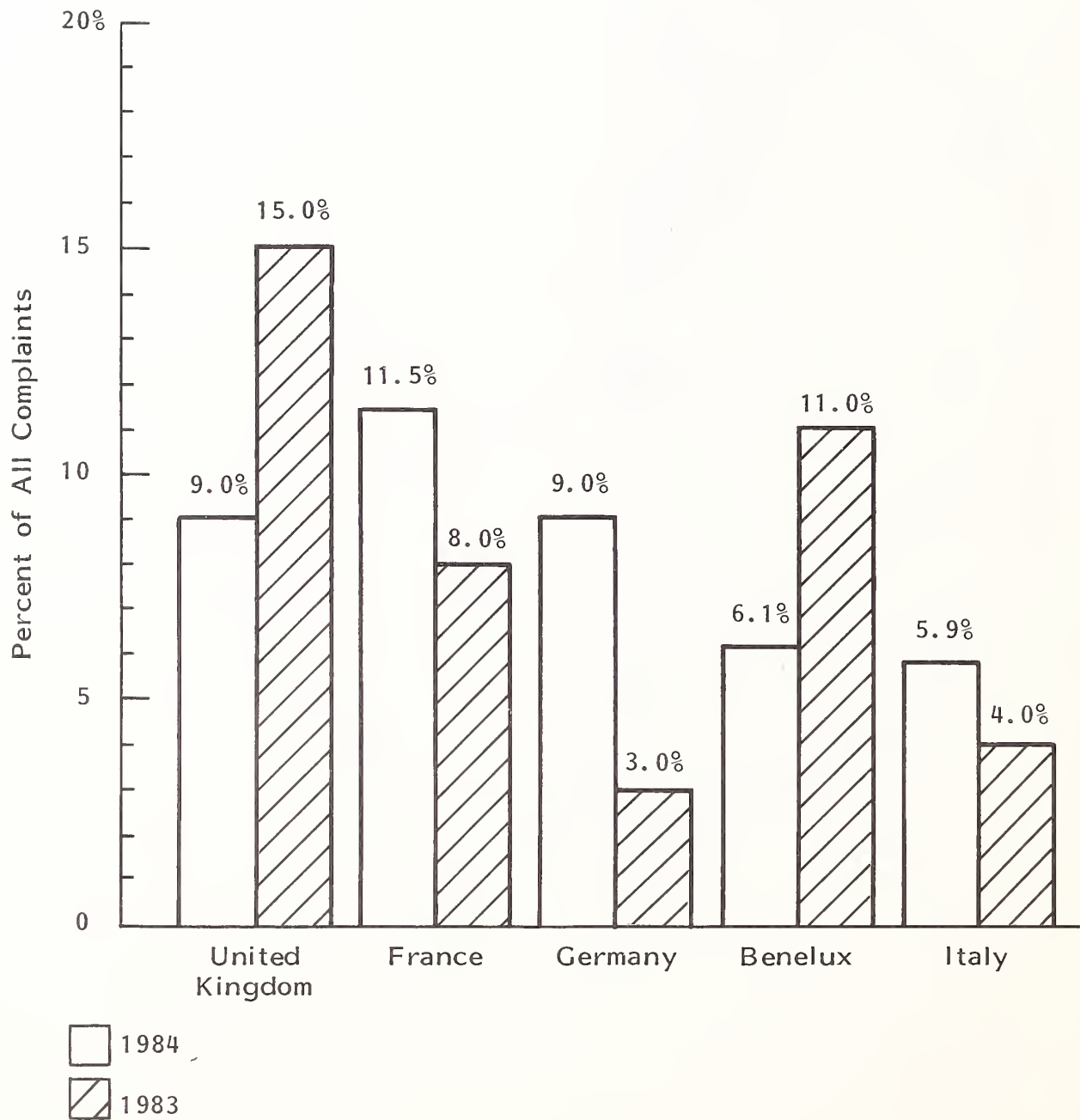


EXHIBIT I-3

USER COMPLAINTS ABOUT PARTS AVAILABILITY

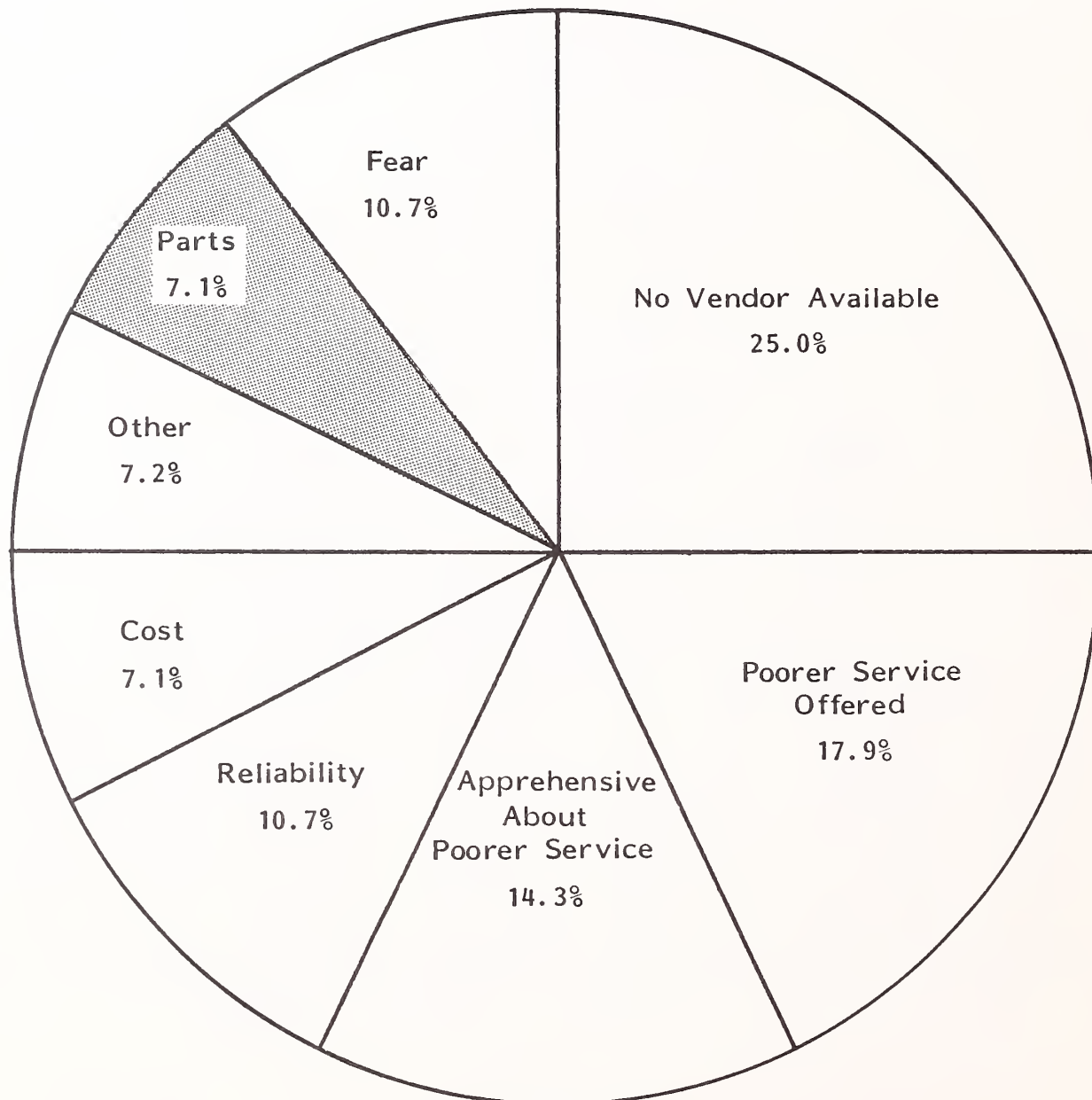


decreasing from 15% to 9%, while in the other major markets, France and Germany, the position has degraded.

- Good parts availability is not just good sense for satisfying customers, it can also be a manufacturer's defense against independent maintainers. As Exhibit I-4 shows, 7% of reasons given for not using independent maintenance are because of fear of parts availability.

EXHIBIT 1-4

WHY USERS DECIDE AGAINST TPM



Source: INPUT Estimate

II USER SATISFACTION WITH PARTS AVAILABILITY

A. EUROPEAN SUMMARY

- As part of INPUT's research for the 1984 Customer Service Annual Report, users were asked to rate the performance of their service suppliers in having parts available. Generally the rating appeared satisfactory, with little variation from product group to product group.
 - Systems (large and small) rating: 7.3
 - Peripherals and terminals rating: 7.3.
 - Data communications equipment rating: 7.7.
 - Office automation equipment rating: 6.9.
 - Copiers rating: 7.4.
- Clearly, performance is poorest for office automation equipment: personal computers, word processors, and workstations.
- Taking the user average rating disguises the level of dissatisfaction with parts availability. Exhibits II-1 through II-5 show the distribution of the user ratings, with areas of dissatisfaction highlighted. A rating of 5 or below equals an unsatisfactory rating.

EXHIBIT II-1

USER SATISFACTION WITH SERVICE PARTS AVAILABILITY SYSTEMS

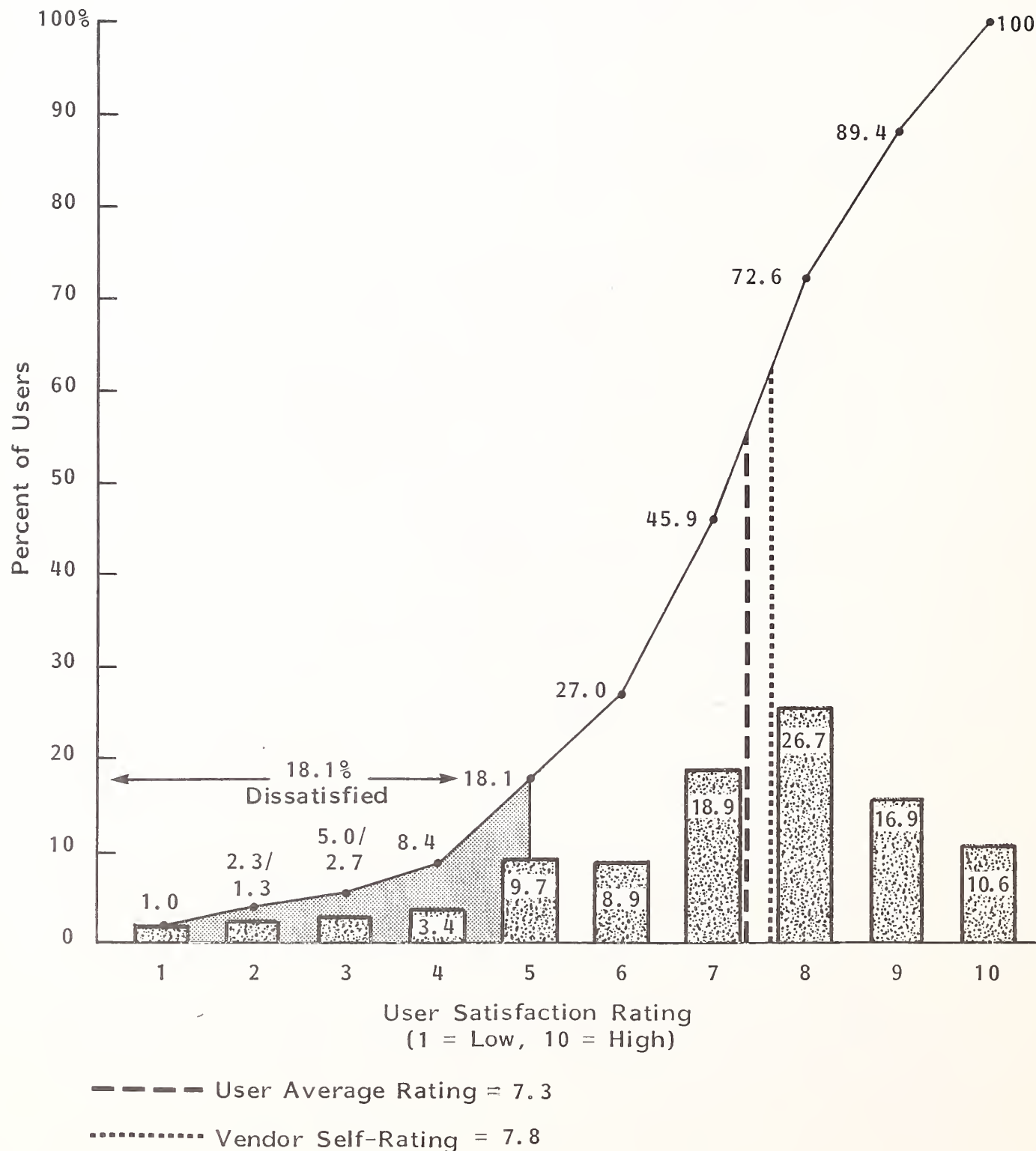


EXHIBIT II-2

USER SATISFACTION WITH SERVICE PARTS AVAILABILITY PERIPHERALS AND TERMINALS

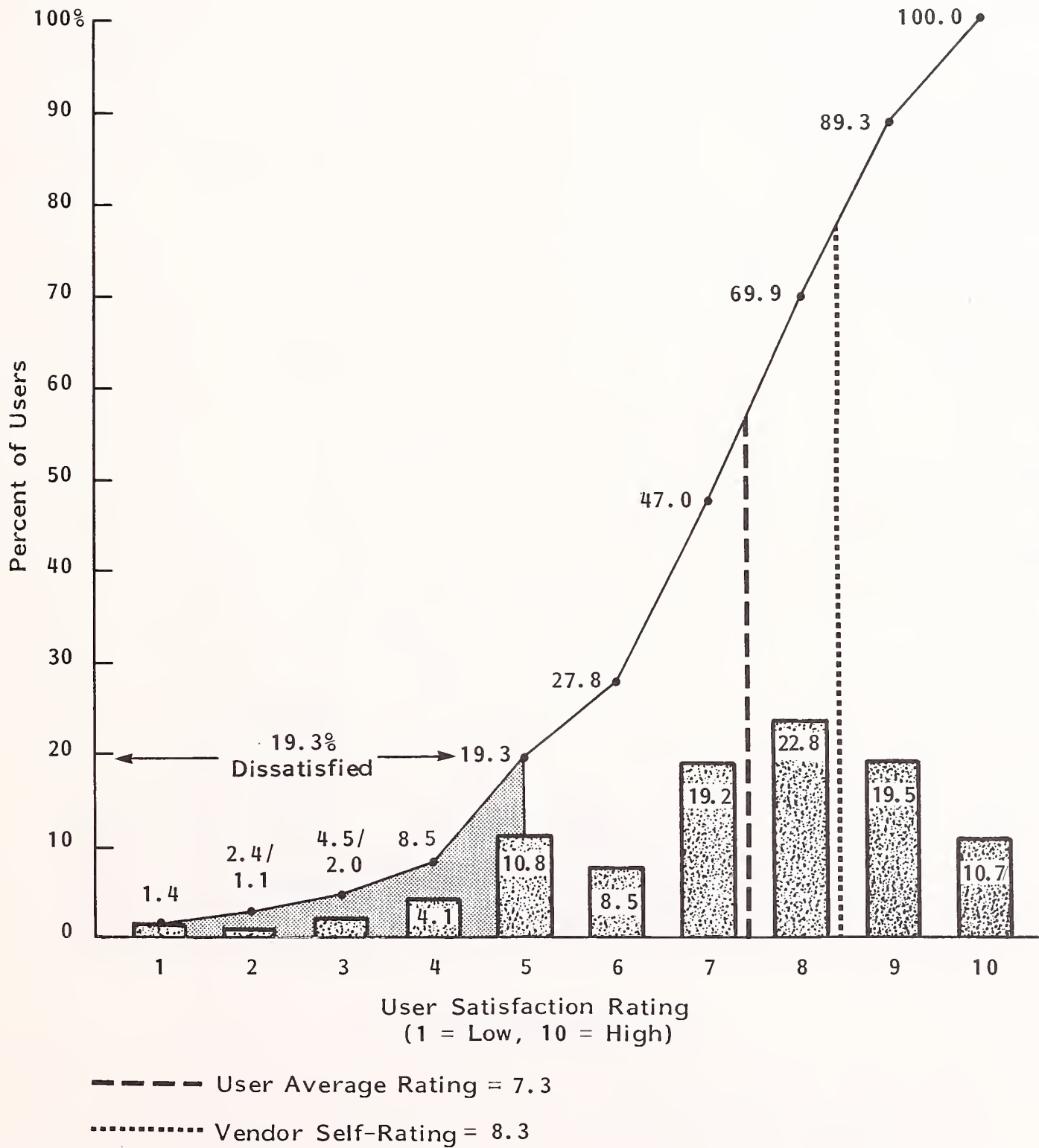


EXHIBIT II-3

USER SATISFACTION WITH SERVICE PARTS AVAILABILITY DATA COMMUNICATIONS EQUIPMENT

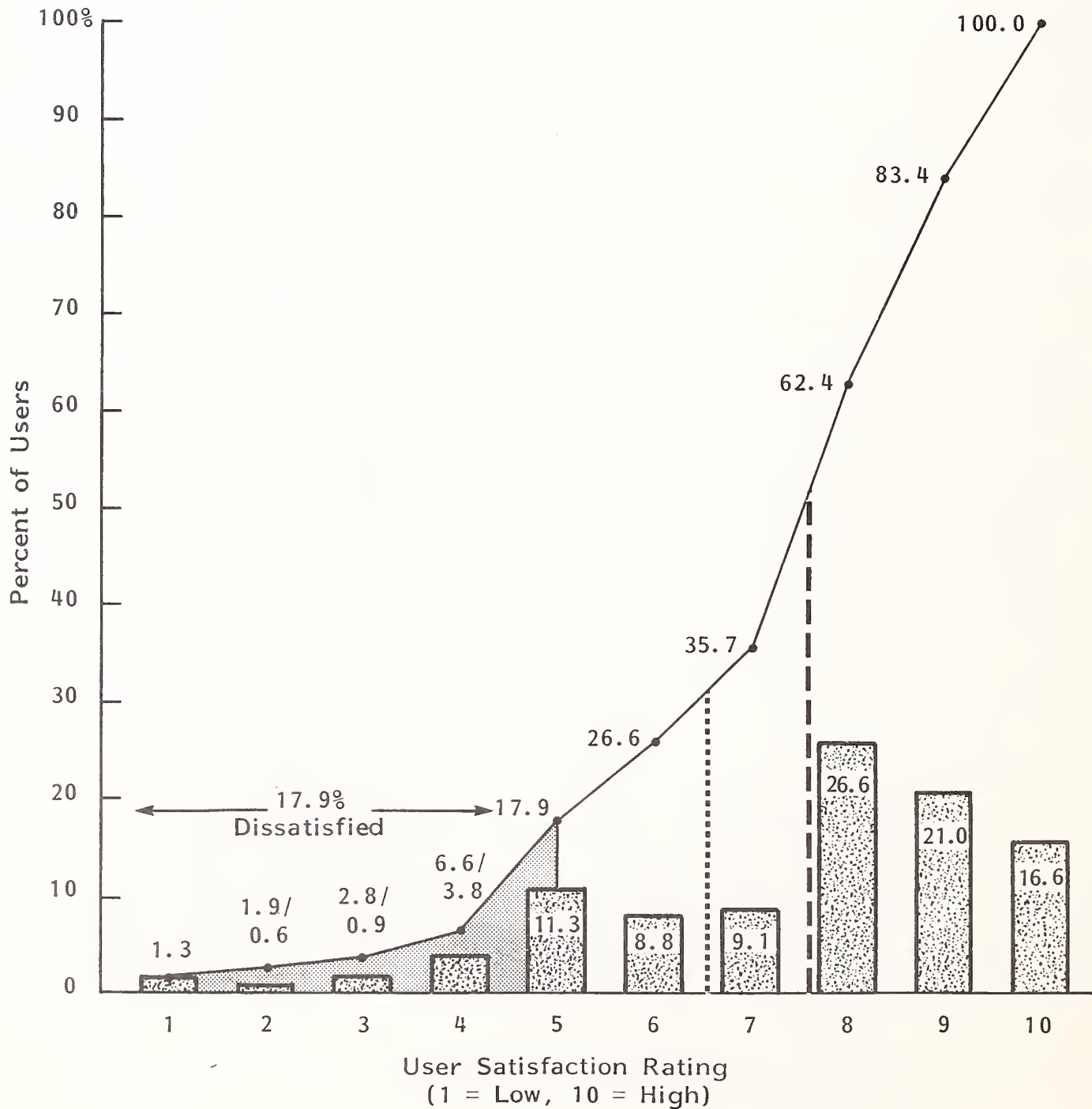
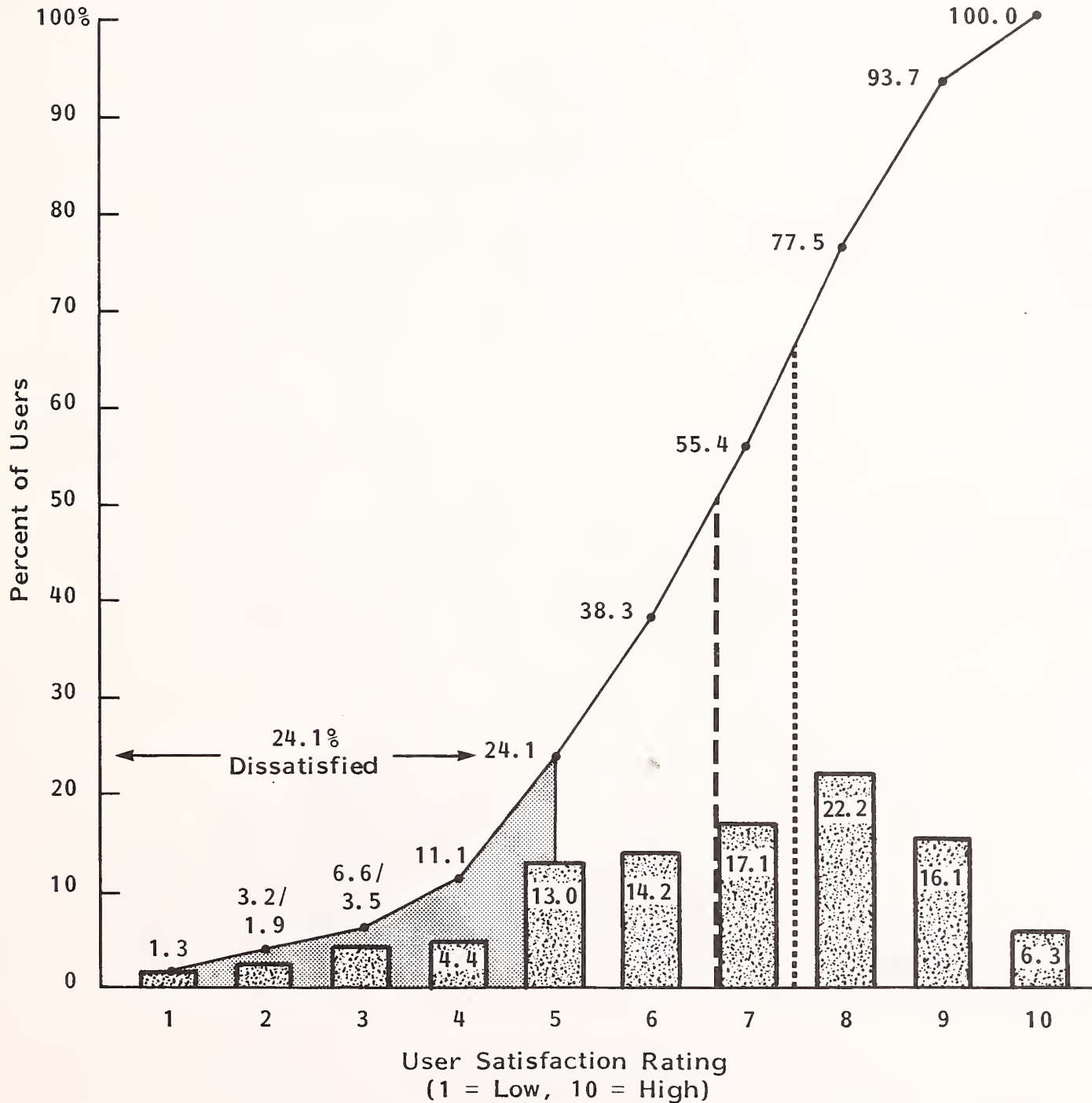


EXHIBIT II-4

USER SATISFACTION WITH SERVICE PARTS AVAILABILITY OFFICE AUTOMATION EQUIPMENT

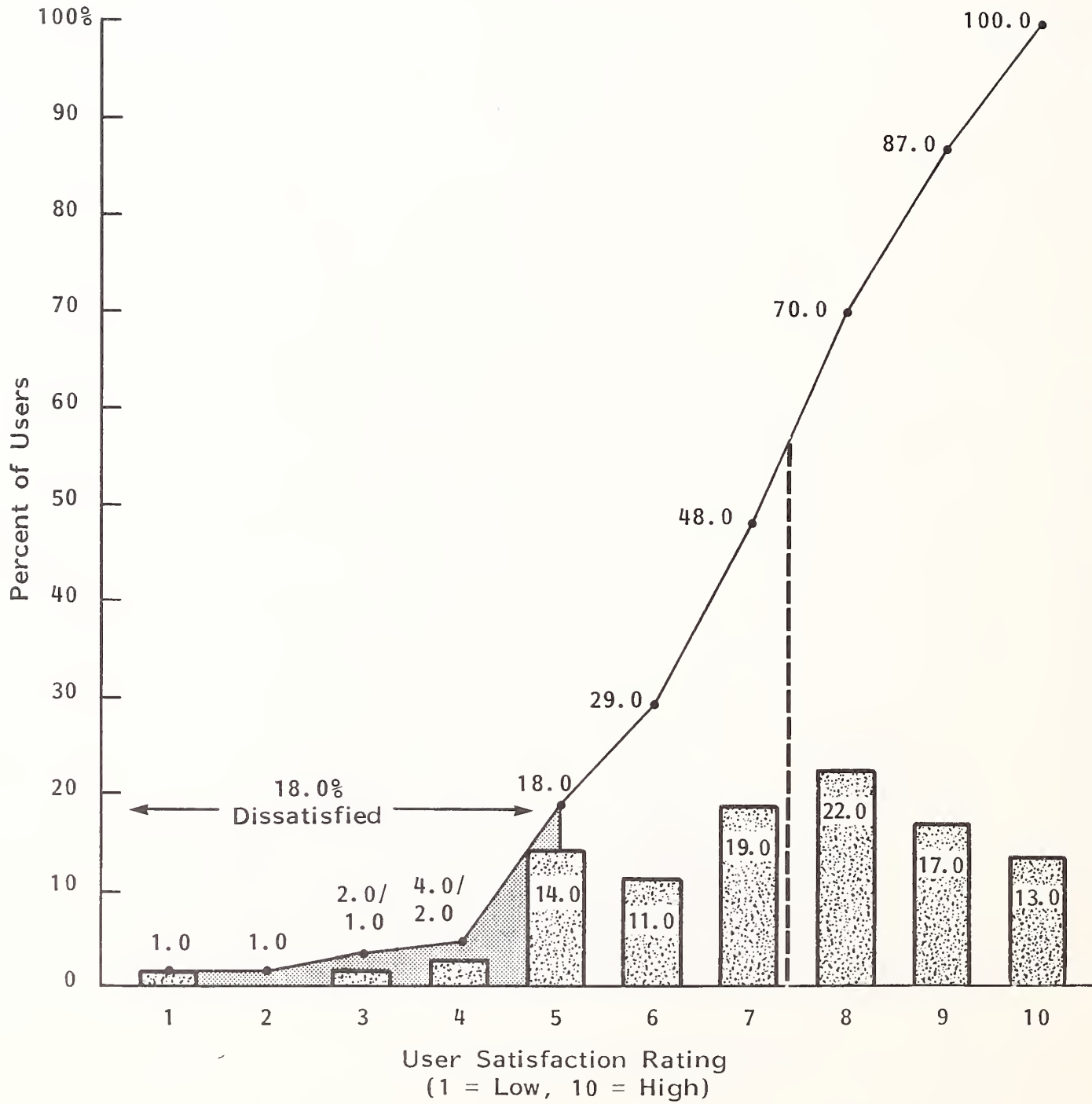


--- User Average Rating = 6.9

..... Vendor Self-Rating = 7.4

EXHIBIT II-5

USER SATISFACTION WITH SERVICE PARTS AVAILABILITY COPIERS



--- User Average Rating = 7.4

..... Vendor Self-Rating

- Systems: 18% of users dissatisfied.
- Peripherals and terminals: 19% of users dissatisfied.
- Data communications equipment: 18% of users dissatisfied.
- Office automation equipment: 24% of users dissatisfied.
- Copiers: 18% of users dissatisfied.
- These figures are serious, and must give cause for concern, particularly in the office automation area, where almost one user in four is unhappy with the current service they are receiving.

B. SYSTEMS

- Exhibit II-6 compares the satisfaction level of systems used in the main European markets. Users in the Benelux countries and Italy are the most satisfied, with German users the least satisfied.
 - German users seem less inclined than others to settle for a neutral rating and the German market shows the highest proportion of dissatisfied users (see Exhibit II-7).
- Germany and the U.K. are the only markets with a higher than average number of dissatisfied users.

EXHIBIT II-6

USER SATISFACTION RATING BY COUNTRY - SYSTEMS

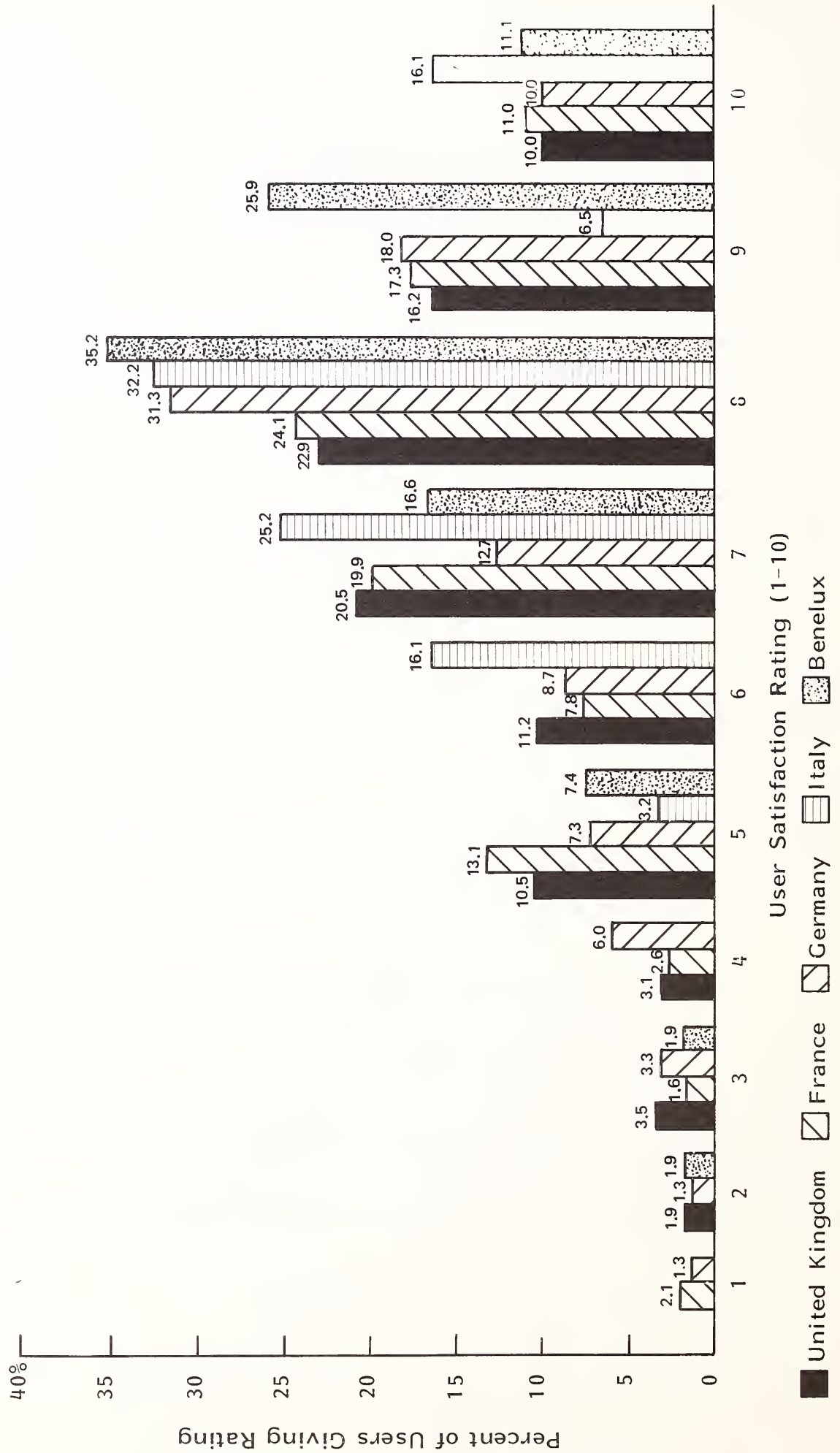


EXHIBIT 11-7

SUMMARY OF USER SATISFACTION WITH PARTS AVAILABILITY - SYSTEMS (Percent of Users)

	HIGHLY SATISFIED	MODERATELY SATISFIED	NEUTRAL	MODERATELY DISSATISFIED	STRONGLY DISSATISFIED	SUMMARY	
						SATISFIED	DISSATISFIED
United Kingdom	26.2%	54.6%	10.5%	6.6%	1.9%	80.8%	8.5%
France	28.3	51.8	13.1	4.2	2.6	80.1	7.2
Germany	28.0	52.7	7.3	9.3	2.6	80.7	11.9
Italy	22.6	73.5	3.2	-	-	96.1	-
Benelux	37.0	51.8	7.4	1.9	1.9	88.8	3.8
Europe	27.5%	54.5%	9.7%	6.1%	2.3%	82.0%	8.4%

C. PERIPHERALS AND TERMINALS

- U.K. users are far less satisfied with parts availability than users from other countries. Once again, Italian users have no complaints about the level of parts availability in their market. This compares with one user in eight expressing dissatisfaction in the U.K. (see Exhibits II-8 and II-9).

D. DATA COMMUNICATIONS EQUIPMENT

- The position here is rather better, with fewer than 7% of users expressing dissatisfaction, compared to 82% who are satisfied. The greatest level of dissatisfaction is found in Germany, while Benelux users are experiencing the best situation. Exhibits II-10 and II-11 summarise the position.

E. OFFICE AUTOMATION EQUIPMENT

- This is the black spot for parts availability, with user dissatisfaction at its highest and satisfaction at its lowest. The position is particularly bad in the U.K., where users record both the most dissatisfaction and the least contentment. Ironically, the U.K. also has the greatest proportion of users who are highly satisfied with availability (see Exhibits II-12 and II-13).

F. COPIERS

- The parts situation with copiers provides a sharp contrast to the office automation position. Here, users are generally very happy with the level of parts

EXHIBIT 11-8

USER SATISFACTION RATING BY COUNTRY -
PERIPHERALS AND TERMINALS

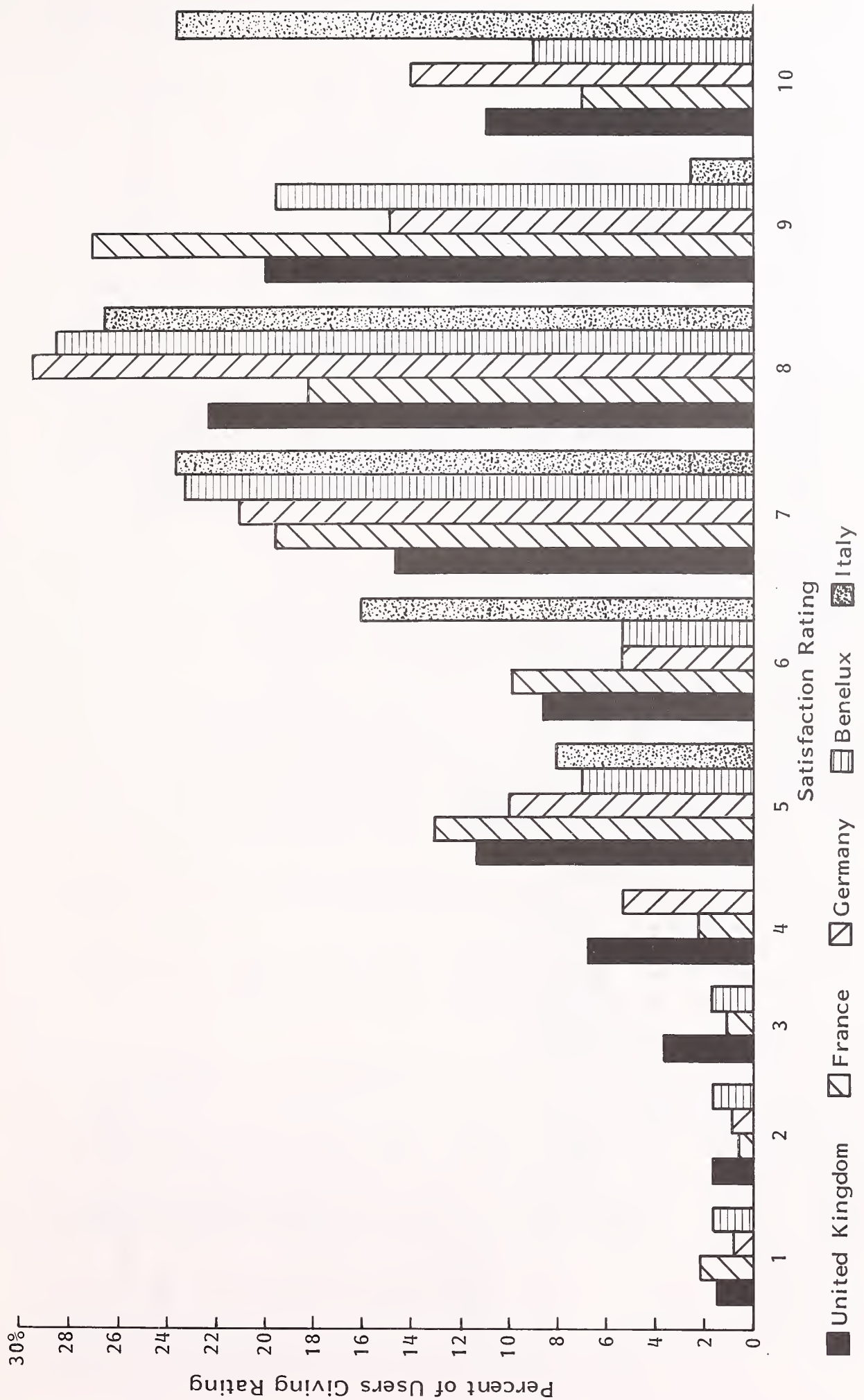


EXHIBIT 11-9

SUMMARY OF USER SATISFACTION WITH PARTS AVAILABILITY - PERIPHERALS AND TERMINALS (Percent of Users)

	HIGHLY SATISFIED	MODERATELY SATISFIED	NEUTRAL	MODERATELY DISSATISFIED	STRONGLY DISSATISFIED	SUMMARY	
						SATISFIED	DISSATISFIED
United Kingdom	30.5%	44.9%	11.2%	10.3%	3.1%	75.4%	13.4%
France	33.9	47.4	13.0	1.5	3.1	81.3	4.6
Germany	28.6	55.8	10.1	3.1	1.6	84.4	4.7
Italy	26.3	65.8	7.9	-	-	92.1	-
Benelux	28.5	57.2	8.9	1.8	3.6	85.7	5.4
Europe	30.2%	50.5%	10.8%	6.1%	2.5%	80.7%	8.6%

EXHIBIT II-10

USER SATISFACTION RATING BY COUNTRY - DATA COMMUNICATIONS EQUIPMENT

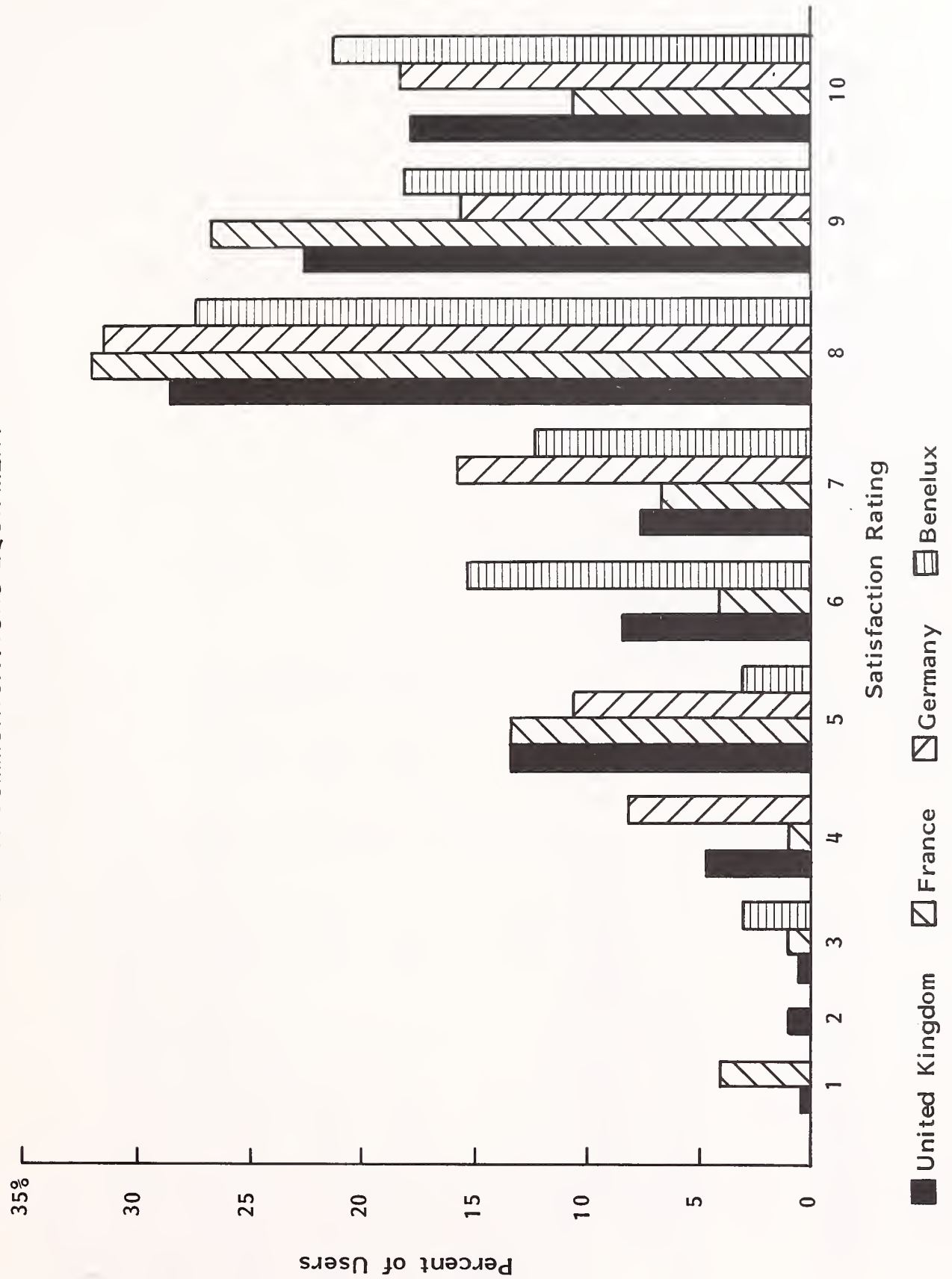


EXHIBIT II-11

SUMMARY OF USER SATISFACTION WITH PARTS AVAILABILITY - DATA COMMUNICATIONS (Percent of Users)

	HIGHLY SATISFIED	MODERATELY SATISFIED	NEUTRAL	MODERATELY DISSATISFIED	STRONGLY DISSATISFIED	SUMMARY	
						SATISFIED	DISSATISFIED
United Kingdom	40.1%	39.5%	13.4%	5.0%	1.9%	79.6%	6.9%
France	37.4	42.7	13.3	2.6	4.0	80.1	6.6
Germany	34.2	47.4	10.5	7.9	-	81.6	7.9
Benelux	39.4	54.6	3.0	3.0	-	94.0	3.0
Europe	37.6%	44.5%	11.3%	4.7%	1.9%	82.1%	6.6%

EXHIBIT II-12

USER SATISFACTION RATING BY COUNTRY - OFFICE AUTOMATION EQUIPMENT

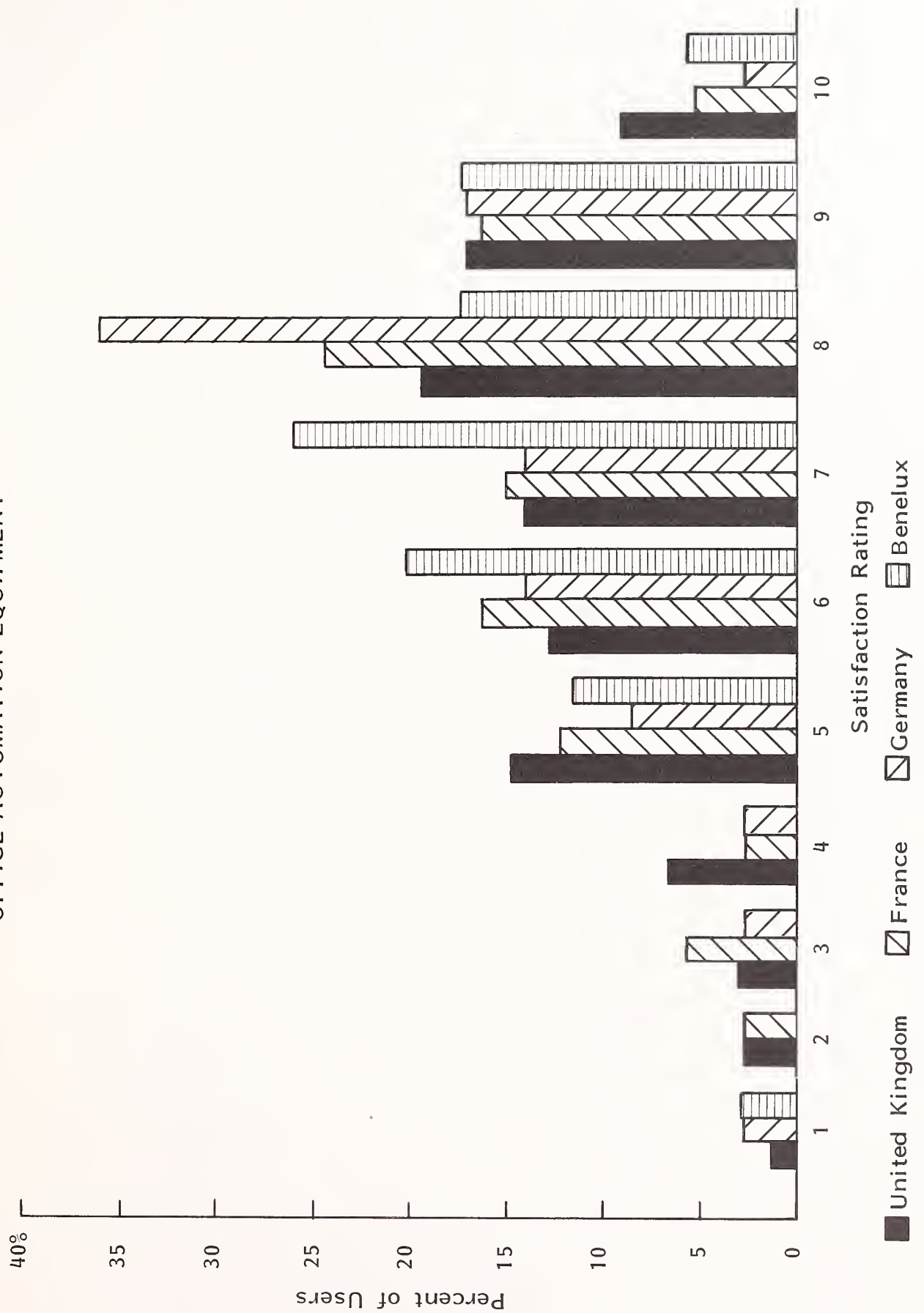


EXHIBIT II-13

SUMMARY OF USER SATISFACTION WITH PARTS AVAILABILITY - OFFICE AUTOMATION EQUIPMENT
(Percent of Users)

	HIGHLY SATISFIED	MODERATELY SATISFIED	NEUTRAL	MODERATELY DISSATISFIED	STRONGLY DISSATISFIED	SUMMARY	
						SATISFIED	DISSATISFIED
United Kingdom	25.4%	46.0%	14.7%	10.0%	4.0%	71.4%	14.0%
France	21.6	55.4	12.2	8.1	2.7	77.0	10.8
Germany	19.5	63.9	8.3	5.6	2.8	83.4	8.4
Benelux	22.8	62.8	11.4	-	2.9	85.6	2.9
Europe	22.4%	53.5%	13.0%	7.9%	3.2%	75.9%	11.1%

availability, only 4% registering dissatisfaction. Once again, German users are the most critical, but still only just over 6% are dissatisfied (see Exhibits II-14 and II-15).

EXHIBIT II-14

USER SATISFACTION RATING BY COUNTRY - COPIERS

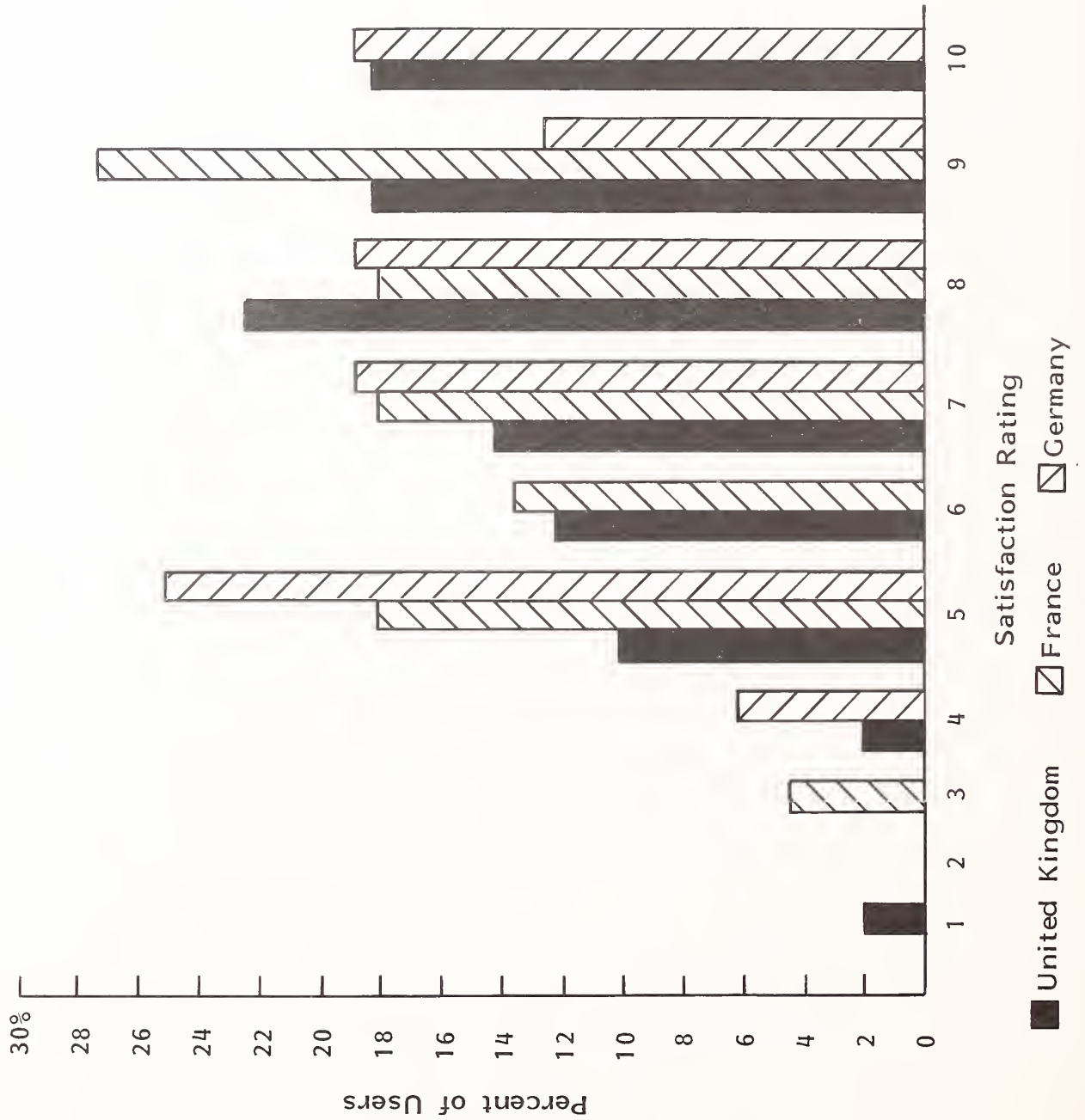


EXHIBIT 11-15

SUMMARY OF USER SATISFACTION WITH PARTS AVAILABILITY - COPIERS
(Percent of Users)

	HIGHLY SATISFIED	MODERATELY SATISFIED	NEUTRAL	MODERATELY DISSATISFIED	STRONGLY DISSATISFIED	SUMMARY	
						SATISFIED	DISSATISFIED
United Kingdom	36.8%	48.9%	10.2%	2.0%	2.0%	85.7%	4.0%
France	27.3	50.0	18.2	4.5	-	77.3	4.5
Germany	31.3	37.6	25.0	6.2	-	68.9	6.2
Europe	30.0%	52.0%	14.0%	3.0%	1.0%	82.0%	4.0%

III VENDOR ISSUES

A. REDUCING PARTS SHORTAGES

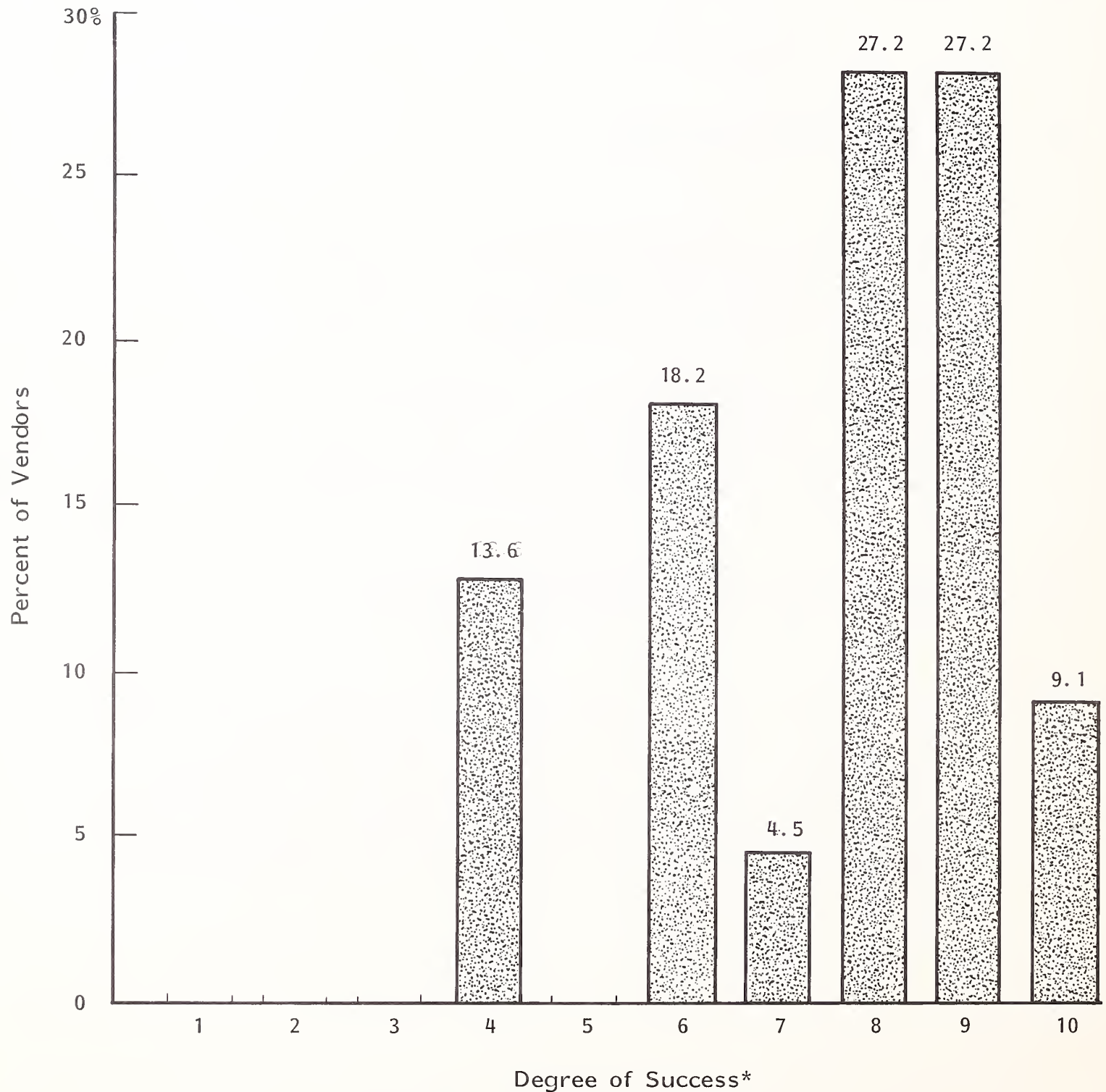
- In a recent survey, vendors were asked to rate their success in reducing the shortage of service parts. The result shows that success has been reasonable--reaching a 7.5 rating on a scale with 10 representing a high success rate.
- Of course, not all vendors have been equally successful, as Exhibit III-1 shows. Vendors' views about their success are borne out by the fact that in 1984 there were fewer user complaints about parts availability than in the 1983 survey.

B. INFLUENCE IN SETTING PARTS INVENTORY LEVELS

- Vendors were also asked to assess the influence they exert in setting parts inventory levels. Once again, the result was a moderate 7.5 out of 10. There was little difference between the views of independent maintainers and manufacturers. This is rather surprising as many independents complain about the difficulties they experience in obtaining parts from manufacturers (see Exhibit III-2).

EXHIBIT III-1

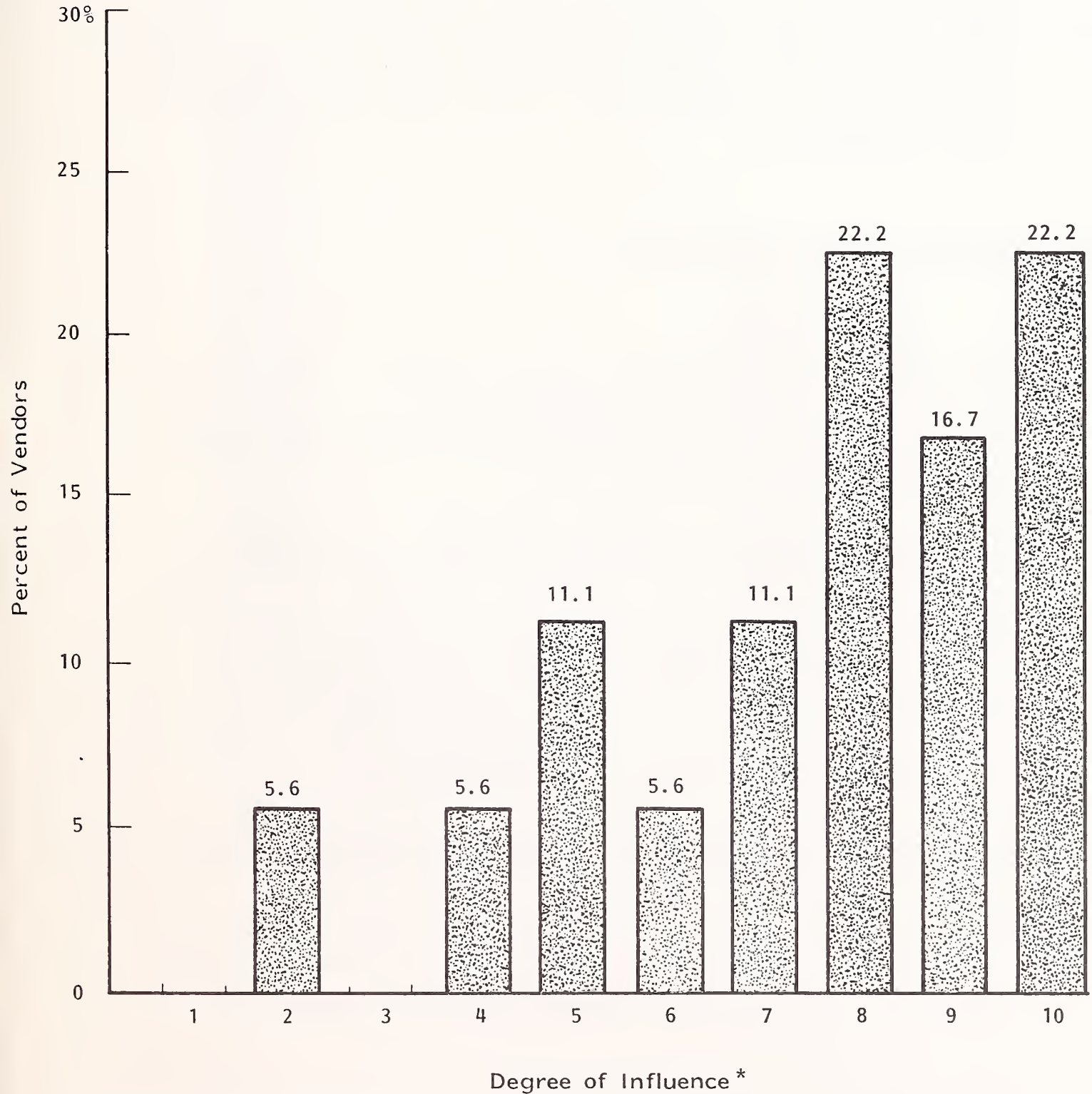
VENDOR SUCCESS IN REDUCING PARTS SHORTAGES



*Rating: 1 = Low, 10 = Highly Successful

EXHIBIT III-2

VENDOR VIEWS OF THEIR INFLUENCE IN SETTING PARTS INVENTORY LEVELS



*Rating: 1 = Low, 10 = Highly Influential

C. EXPENSING SERVICE PARTS

- Among vendors, there is a divergence of views about expensing service parts. Some 25% of service providers do not have a system for expensing parts. Of those who do have such a system, views differ widely, generally based on the value of the part, about the value below which parts are expensed. The range runs from \$5 to \$500, with \$10 being the most common level. Other values used include \$25, \$50, \$100, and \$150. Some vendors regard "consumable stores" as expense items.

D. MEETING DEMAND FROM STOCK

- A key measure of the effectiveness of inventory control is the "hit rate", i.e., the demand for parts which can be satisfied immediately from stock. Current performance ranges from a low of 51% to a high of 100%. The full distribution is shown on Exhibit III-3.
- The low hit rate, with almost one-quarter of vendors achieving 70% or less, must have a serious effect on the vendor's ability to complete a repair at first visit. The additional cost of the repeat call must be offset by the incremental cost of the inventory. Pushing for a higher level of fulfilment leads to increasingly high levels of inventory, as shown in Exhibit III-4. As can be seen, it is virtually impossible to "guarantee" a 100% hit rate, although it may be possible to maintain this level for a limited period of time.
 - However, one vendor has achieved 100% fulfilment for some 14 years.
- Despite the difficulties and costs of trying to meet 100% of demand from stock, this is the ambition of some 35% of vendors. The level of ambition ranges from a low of 70% to be satisfied up to 100%, with a mean of 92.5%.

EXHIBIT III-3

PERCENTAGE OF REQUESTS IMMEDIATELY SATISFIED FROM STOCK

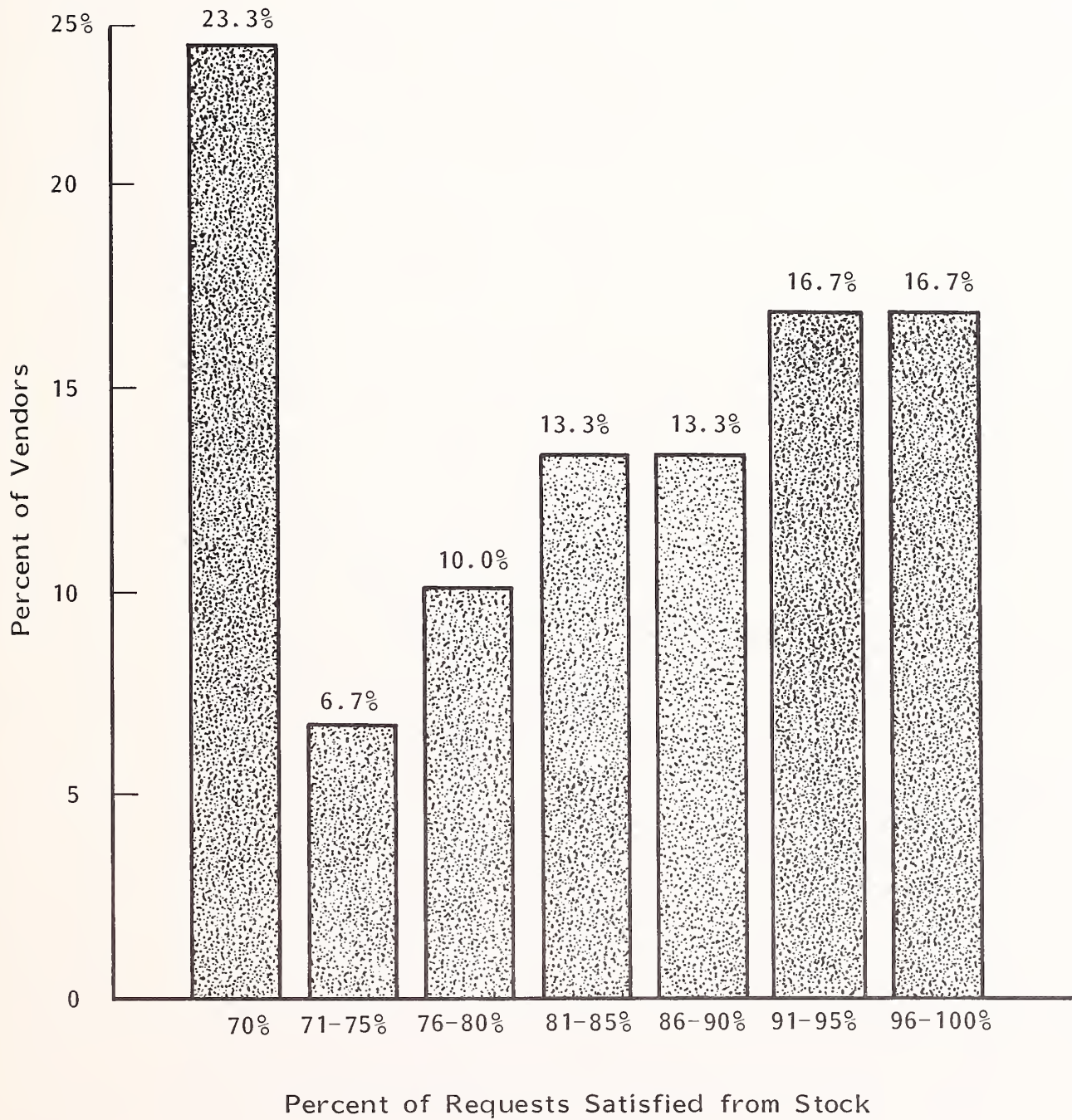
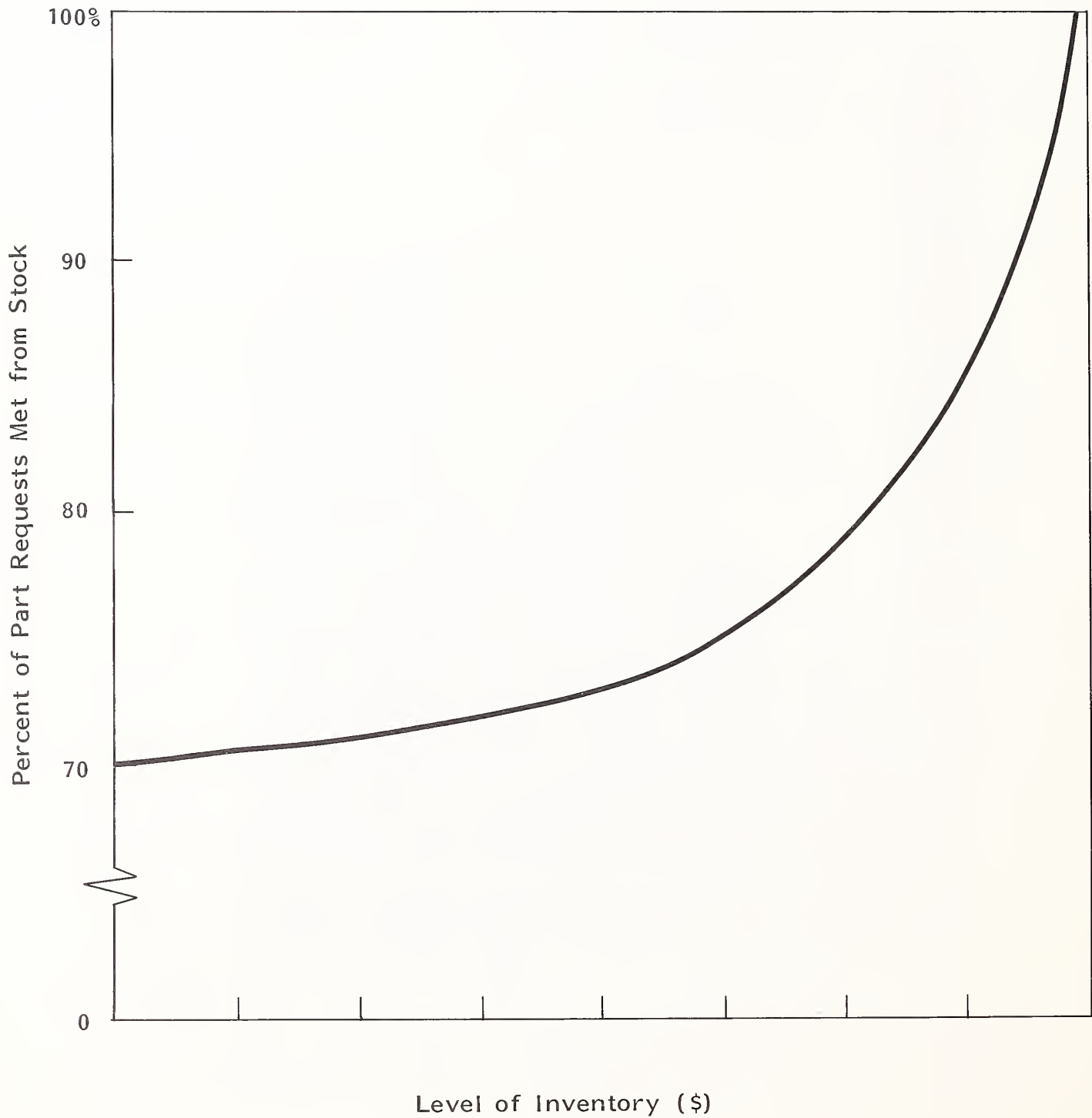


EXHIBIT III-4

INVESTMENT IMPLICATIONS OF INCREASED INVENTORY LEVELS



- As already said, the hit rate is vitally important for improving both vendor profitability and user satisfaction. Effective forecasting of part failure rates coupled with computer-based optimising inventory systems can go a long way both to improve the hit rate and reduce inventory levels.
- An optimising system to be effective must be dynamic rather than using static maximum/minimum stock levels. The system should periodically recalculate reorder levels based on user demand and a new economic order quality (probably decided in conjunction with the manufacturing function).

E. INVENTORY CONTROL

- The number of stock items held by vendors obviously depends upon the number of systems being supported. Typically, holdings range from a low 4-week supply up to a high 36-week supply. Paradoxically, the vendor with the lowest holding is achieving the highest hit rate, 100%, while the vendor with one of the highest holdings has the lowest hit rate.
- The value of this inventory ranges from the lowest holding of \$2.2 million to a high of \$15 million. Most vendors have a computerised inventory control reflecting their machine population. The main area of concern in entrusting control to the computer is the danger of overstocking. In one area, replenishment is semi-automatic, in that parts are recommended for replenishment at the time of usage, but screened by computer to ensure that certain identified items are not ordered.
- It is unusual for parts to be held on customer sites. Generally this is only done if the customer is extremely large, or if his site is unique. Where parts are held on customer sites, they are treated as an extension of the vendor's own store, in that the customer is not charged for the parts, and they are included

in the total stock count and are free to be used for other repairs. One independent maintainer, however, actually operated from user sites.

- Remote diagnostics is one valuable method of determining the fault and ensuring that the engineer has the correct part available before visiting the site. Most vendors make some use of this technique, but it has not had a great impact yet.
- There are differences among vendors about engineers carrying a standard parts pack at all times. Many vendors do not have a standard pack; others are selective either by type of system supported, or by industry sector. One vendor has IBM PC kits available to engineers, although engineers do not carry it at all times.

IV ORGANISATIONAL ISSUES

- Service parts are an essential raw material in providing customer service of a standard acceptable to the user. Logically, therefore, these parts should come under the control of the customer service function, even though this may result in an increased total corporate inventory when service parts and manufacturing parts are taken into account.
- In some cases, there are constraints on the freedom of C.S. departments to hold stocks. These constraints usually take the form of a budget limitation imposed from outside.
- There is a divergence of approach to the decision to produce service parts. In some cases, the decision depends upon the product, with customer service making the decision for current and obsolete products. More often, the decision is taken centrally, based on requests from customer service.
- Manufacturer's unwillingness to support obsolete equipment is one of the reasons given by users for considering independent maintenance. Availability of parts may be one of the reasons for withdrawal of service.

V PARTS REPAIRS

- There is a considerable divergence of approach to repairing service parts, due mainly to the differing organisational structures of vendors. The usual approach is to try and repair, but not if the part is valued at below \$150. Frequently parts are sent back to the original plant for repair, but some vendors have set up dedicated repair centres.
- When parts have been repaired, they are almost always priced or valued at the standard list price. The cost of the repairs is usually charged against the customer service budget.
- Subcontracting of repairs is widespread.
- Manufacturers are extremely reluctant to repair parts returned by independent maintainers. There are a number of agreements in existence between manufacturers with compatible equipment. The attitude to repairing third-party returns is a reflection of the reluctance of manufacturers to deal with TPMs.
- Many manufacturers are now using the same source for certain items of hardware, so there is a future potential for a common repair centre used by the manufacturers concerned.
- The sophisticated repair facilities which are sometimes needed can also justify establishing a common repair facility for common parts. An example of this is the Winchester disk repair facility set up by Memory Maintenance.

- Where companies have centralised manufacturing, communal repair facilities closer to the market may make economic sense rather than having to hold increased inventory to compensate for stretched repair turnaround times.

VI PARTS MARKETING

- The move toward multivender environments and the increasing security consciousness of users in an era of increased competition in the service market is likely to have substantial impact upon the service parts industry.
- Currently, vendors are reluctant to supply parts to third-party maintainers, and TPMs themselves complain about the difficulties they experience in obtaining parts from manufacturers. Manufacturers themselves are now becoming more interested in undertaking third-party maintenance. For this to become a reality, the manufacturers will have to ease the supply of parts.
- Once the supply of parts becomes easier, the way will be open for specialist parts suppliers to operate. This has happened in many industries, and there is in the medium term, no reason why it should not happen in the information technology sectors.
- The key benefits of third-party maintenance to customers would be to reduce individual inventory levels, improve lead times, and ensure greater security of supply. To succeed, of course, the venture will have to be able to obtain parts from the manufacturers. INPUT's research suggests that most manufacturers would, albeit reluctantly, be prepared to supply parts to such a marketing operation.
- Once such a venture is established in the marketplace, a number of other ventures could spin-off. They could, for example, become repair centres, as

well as parts suppliers, undertaking repairs of equipment as well as parts. Further, they could provide a distribution system to deliver the required parts not only to a vendors' store, but possibly also to the engineer or indeed, direct to the customer site.

- Although capital intensive, this approach could be an extremely profitable business opportunity--Unipart, for example, is a highly profitable operation within British Leyland. Exhibit VI-I is a schematic distribution structure utilising such a parts marketing operation.

VII ACCOUNTING ISSUES

- In an age of still relatively high inflation, stock valuation can have a significant impact on company profitability, both from the depreciation cost point of view and the trading profit angle. Obviously, the cost of parts either purchased or manufactured changes over time, and decisions have to be taken as to how to value those parts when held in stock.
- The most common approach is to value them at a moving average cost reflecting the original cost of the stock updated by subsequent changes. Where manufactured parts are involved, there is a divergence of views as to internal costing--some manufacturers transferring parts at cost, while others add a notional profit margin.
- These approaches, however, although entirely correct in accounting principle, may not adequately reflect the current commercial value of the parts, which may be decreasing as hardware prices fall, although the inventory cost may be increasing. An alternative approach, adopted by at least one vendor, is to hold stock at current sale price less the targeted gross profit margin.
- Obsolescence of parts can also prove to be a problem--in knowing over what period of time to write-off the value--assuming that, in fact, all the value should ever be totally written off. The consensus is to take a straight five-year straightline approach with parts written down to zero value over that time period.

- There are some variations on this theme, with parts being depreciated more rapidly towards the end of the five-year period than at the beginning. A more significant variant is to writeoff the parts over the guaranteed support life of the product. The potential implication of this last approach is higher inventory value, offset by a lower annual depreciation charge.
- Some vendors do apply variable rates according to the type of equipment, but the 'five-year rule' still applies.
- There are possible tax implications to the costing of parts, particularly where these are manufactured outside the country of use. By 'overpricing' or 'underpricing' parts, it can be possible to transfer the corporation tax liability from one country to another. Although possible, the policies being adopted by vendors do not suggest that this is a major area of concern.
- Diagnostic parts are recognised and identified separately by most vendors, but they receive no special accounting treatment. Other vendors make no distinction between service and diagnostic parts.
- The movement of parts around the world, particularly as many come from non-EEC countries, can attract the the attention of customs officers and the ensuing duty. Although all vendors recognise this problem, most accept it, like death, as inevitable and rely on good inventory control to minimise the level of duty.
- There are moves to utilise freeport facilities in Europe to reduce, or at least delay, the payment of duty, but this is not yet widespread. Freeports may in the longer term be very good sites for international distribution/repair centres, not only for the tax angle, but also because they are generally near good centres of communication.

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